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Greenhouse Gas Auction Revenues Can Help Cut Md. Electric Use Significantly, Says Study

COLLEGE PARK, Md. – Maryland officials can reduce electricity use in the state significantly by investing revenues from the Regional Greenhouse Gas Initiative (RGGI) cap-and-trade auctions in energy efficiency programs, says a new study from a University of Maryland-led research team. It adds that neighboring states might benefit as well.

The 10-state RGGI group, including Maryland, recently conducted the nation's first carbon emissions auction, raising nearly \$40 million in revenues.

The new study concludes that:

- Investing a greater share of auction revenues in programs designed to encourage more efficient consumer and commercial use of electricity will produce significantly greater benefits, keeping the state on track to meet its energy-use reduction targets.
- Even though prices may not go down, consumers may see some modest savings because they consume less electricity due to efficiency improvements
- The overall economic impact on the state of these investments will be positive.

Investments might range from direct subsidies helping consumers or businesses buy more energy-efficient appliances to technical assistance retrofitting buildings to public awareness campaigns, though the study does not recommend any specific approach.

The University of Maryland's Center for Integrative Environmental Research (CIER) produced the study along with a research team from Resources for the Future, The Johns Hopkins University, and Towson University.

"The bottom line is that the revenues from the nation's first greenhouse gas auction can be invested to decrease energy consumption and create a positive overall economic impact, all while providing significant environmental benefits," says University of Maryland public policy professor Matthias Ruth, the principal investigator and director of the Center for Integrative Environmental Research.

<http://www.publicpolicy.umd.edu/faculty/ruth/>

"The state is faced with a very complex decision here and must balance a lot of interests – especially in the midst of tough economic times," Ruth adds. "But sound environmental policy can make overall economic sense and does not have to produce hardship on consumers. Our findings show that maximizing the investment in energy efficiency does pay off in significantly increased benefits."

The Maryland Department of Environment commissioned the study to help the state explore the economic and environmental implications of using RGGI revenue in support

of energy efficiency programs, as well as to determine the impact on producers, consumers and other stakeholders. The analysis began prior to last month's auction and the study's findings are not based on its results.

As a member of the 10-state RGGI pact, the state is allocated an annual budget, or a cap, for carbon dioxide emissions allowances. By auctioning these off to energy producers, the state raises money, some of which must be used to benefit consumers.

Using a series of sophisticated modeling techniques, the research team compared the impact of investing half versus all auction revenues in efficiency improvements against a low-investment baseline of one-quarter. These scenarios assume that Maryland will sell off all of its allowances to producers, rather than giving some away. Auctioning a majority of allowances is the "clear trend" among most RGGI states, the report says.

The full CIER report is available online: <http://cier.umd.edu/RGGI/index.html>.

SPECIFIC FINDINGS

Among the CIER study's findings:

- **Cuts in Electric Use:** Devoting all revenues toward energy efficiency could cut electricity demand and consumption an additional six percent when compared to the minimum investment strategy, almost entirely by reducing imports from out-of-state generators.
- **Consumer Savings:** Devoting more of allowance revenues to efficiency will modestly reduce the expenditures on electricity by Maryland consumers. This is due to the combination of small effects on electricity prices and reduced usage. Maximizing auction investments could cut electric bills up to seven percent more than the minimum investment strategy. For the average household, this translates into an additional savings of roughly \$72 per year by 2020.
- **Generator Profits:** Maryland electricity generators would see substantially less than a one percent drop in revenues, regardless of the investment strategy. Reductions in energy usage would primarily translate into a drop in imports from out-of-state generators. Also, generators will tend to pay less at auction as demand drops (see below).
- **Auction Revenues Decline:** Investments in efficiency will ultimately drive down revenues produced by the auctions. As consumption drops, so will the price generators will be willing to pay at auction. Maximizing investment may translate into an additional nine percent drop in auction revenues compared to the minimum investment level.
- **Overall Positive Economic Impact:** Maximizing investments in energy efficiencies creates the greatest economic benefit to Maryland in terms of gross state product, employment and wages. Investing 100 percent of auction revenues would translate into an additional half a billion dollars by 2020 and an additional 4,300 jobs when compared to the minimum investment scenario. While positive,

these numbers represents a small portion of the total Maryland economy: less than .1 percent.

- **Impact on Neighbors:** Some of these benefits may spill over to other RGGI members and other nearby states on the same energy production grid.

This is the second RGGI study produced by the University of Maryland-led team. In 2007, they forecast the likely effects of Maryland joining RGGI. This new report builds on their previous work.

<http://www.newsdesk.umd.edu/sociss/release.cfm?ArticleID=1394>

METHODS

Three models were employed by the research team to determine a variety of impacts on the economy and the electric power grid. Included in the study were effects within other RGGI states and related areas.

By using three separate models, the research team was able to sharpen and customize its projections and cover the broad array of effects and geographical areas to be studied. Three subcontractors provided projections based on their proprietary models.

Haiku Model: A national economic simulation model of electricity markets based on market equilibrium concepts. Haiku was created by Dallas Burtraw, Karen Palmer and Anthony Paul from Resources for the Future, a nonprofit and nonpartisan organization that conducts independent research on environmental, energy, and natural resource issues. This model helped to answer questions such as how will Maryland's electric power prices change and how will the fuel mix for power generation change at different levels of energy efficiency investment. This model also provided data for the other researchers.

JHU-OUTEC: "Johns Hopkins University-Oligopoly Under Transmission and Emissions Constraints" was developed by Ben Hobbs and Yihsu Chen. It is a regional market equilibrium model for the mid-Atlantic power generation market. It is designed to account for the possible exercise of market power in the generation sector. By incorporating details about the region's electric transmission grid, the model helped assess how market power of generation companies could be affected by the energy efficiency investment scenarios.

IMPLAN: Towson University used IMPLAN, an input-output model, to estimate statewide changes in employment levels, among other important economic indicators. Daraius Irani of Towson's Regional Economics Study Institute (RESI) and Jeffrey Michael formerly of Towson University measured statewide economic and fiscal impacts of the investment scenarios.

ABOUT CIER

The research was conducted by CIER, the University of Maryland's Center for Integrative Environmental Research. CIER addresses complex environmental challenges through research that explores the dynamic interactions among environmental, economic and social forces and stimulates active dialogue with stakeholders, researchers and decision makers. Researchers and students at CIER, working at local, regional, national and global scales, are developing strategies and tools to guide policy and investment decisions. For additional information, visit <http://www.cier.umd.edu>

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